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FOOD REQUIREMENTS AND FOOD EXPENDITURES OF MEN AND WOMEN

The desirability of apportioning food expenditure between husband and wife has occasionally arisen in connection with family budgetary studies.* The selection of the best ratio presents many difficulties.†

It would seem desirable, if possible, to establish the ratio on purely physiological grounds. The actual food requirements of men and women should serve as a basis for the establishment of the ratio. We may, therefore, direct attention to the constants recently based‡ upon precise measurements of the basal metabolism of 136 men and 103 women.

For purposes of practical rationing, the basal metabolism constant of the individual must be multiplied by the proper factor for the increase in metabolism due to activity. In the absence of information concerning this factor, which will vary according to the occupation and habits of the subject, the safest basis of comparison seems to be the basal metabolism constant.

In the volume cited it has been shown that the daily basal heat production of the average man is 1,632 calories, whereas that of the average woman is 1,349. Thus the daily heat production of woman is about 300 calories less than that of man. Expressing the relationship as a ratio we have 100 : 83.

This value makes no allowance for muscular activity. Neither does it take into account differences in the age§ of the subjects dealt with, nor differences in their size. Women are, on the average, smaller than men. In either sex, large individuals have on the average a greater food requirement than smaller ones. From the budgetary standpoint, body size is not to be taken into account. It is, however, interesting to note that the average daily basal heat production of the 136 men was 25.7 calories per kilogram of body weight, whereas that of the 103 women was 24.5 calories per kilogram; or, the two stand in the ratio of 100 : 95. On the basis of the older conventional physiological standard of estimated body surface area (Meeh), men show a food requirement per square meter of 830 calories as compared with 753 calories for women, or a ratio of 100 : 94. On the basis of the revised surface standard (Du Bois) the ratios are 925 : 850, or 100 : 92.

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* *Ann. Rept. U. S. Comm. Labor*, vol. xviii, p. 102, 1903; *Monthly Labor Rev., U. S. Bu. Labor Stat.*, Oct., 1917, p. 6, Dec., 1917, p. 6, and Dec., 1918, p. 115.

† The direct determination of the food consumption of the two on the basis of family statistics is practically impossible. Secrist (*Am. Stat. Assn. Publications*, vol. xvi, pp. 467–471, Sept., 1919) has suggested the use of cafeteria checks. As a basis for estimating the food item of annual budgets of men and women under given economic conditions, his statistics have some interest. They do not, however, seem to be of much value for purposes of determining the proper apportionment in family budgets, for the following reasons: The class of individuals is not the same. In one case expenditure is altogether individual; in the other a joint food supply is purchased. We note in short that food *expenditures* measured in this way would not necessarily represent the food *requirements* of the individual. While cost is the measure required in family budgetary studies, the division of actual cost of the joint food supply of husband and wife is more likely to represent actual food requirements of the two sexes than is the expenditures of the college, office, shopping, and theater classes in public restaurants.

‡ Harris, J. Arthur, and Benedict, Francis G., "A Biometric Study of Basal Metabolism in Man." Publication 279, Carnegie Inst. of Wash., 1919.

§ Metabolism decreases with age (Harris and Benedict, *loc. cit.*, pp. 107–127). The mean age of the 136 men is 26.88 years, whereas that of the women is 31.15 years. Since age cannot be considered in most budgetary studies this factor must be neglected.

When body weight, stature, and age (all of which have been shown to be significant factors in determining, in the statistical sense, the metabolism of the individual) are taken into account by the use of multiple prediction equations,* women show a basal metabolism rate about 6.2 per cent lower than that of man.

These values, in which correction for body size and age have been made, are inserted merely to emphasize the reality of the difference in the basal metabolism of men and women. For purposes of actual rationing, differences in size must not be disregarded. It appears, therefore, that the 100 : 90 which has been used in the past is not an unfair ratio. Probably 100 : 85, in view of the generally greater muscular activity of the man, or an even lower ratio, would more properly express the proportion assignable to husband and wife.

J. ARTHUR HARRIS.

FOOD PRICES IN THE UNITED STATES DURING THE WAR

Although the various indices are in substantial agreement as to the course of food prices in the United States during the period of the World War, confirmation of the record by data drawn from independent sources is still desirable. Such confirmation is at hand in the accounts of a large concern† which makes a business of operating restaurants in different parts of the country. The company purchases its supplies chiefly in Chicago, Kansas City, St. Louis, San Francisco, and Los Angeles. The supplies are largely foodstuffs of better grade. The purchasing records of the company thus reflect the ruling wholesale food prices in the principal western markets.

The table submitted below develops a weighted index of wholesale food prices in April, 1919, as compared with April, 1916. Columns (2) and (3) of the table give the prices paid in April, 1916, and April, 1919, for unit quantities (column 1) of 67 articles. The unit price in each case is an average derived from the company's purchases of the month. Column (4) states the number of units of the article used during April, 1919, at one of the company's restaurants. This restaurant is in a "railroad town" and caters chiefly to passengers from trains and to railroad shop and trainmen. Column (6) lists the amounts actually paid for the goods used at the restaurant during April, 1919. Column (5) shows what would have been paid for the same quantities of the same articles had they been purchased at the prices of April, 1916. The ratio of column (6) to column (5) indicates that wholesale prices of the foods on the list, weighted in the manner indicated, rose approximately 74 per cent during the three years ending April, 1919.

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*Harris and Benedict, *loc. cit.*, p. 205–219.

† The company has requested that its identity be not disclosed.